



Opportunities for Offset Market in Indian Aerospace and Defense Aircraft Industry

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Lucintel

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- ***Offset Policy Overview***
- ***Offset Market Opportunity in India***
- ***Emerging Trends in Indian Offset Market***
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Executive Summary

- **Aerospace and Defense aircraft offset opportunity in India is growing with strong fundamentals**
 - India implements offset policy in both civil and defense aircraft at 30% of the contract value and minimum contract value is \$70 million.
 - Indian aerospace and defense aircraft offset market opportunity crossed ~US \$1.0 Bn in 2014 and is forecast to grow at 9.5% CAGR in the next six years to reach ~US\$1.74 Bn in 2020
 - Defense aircraft offset accounted for 87% of the total Indian aircraft offset annual value in 2014 whereas civil aircraft with remaining 13%
- **Increasing defense spending, growing engineering services outsourcing, and increasing domestic and foreign players involvement in Indian defense industry are the key trends**
 - Indian defense spending was about ~US \$50 Bn in 2014 and is likely to reach US \$71 Bn in 2020
 - Major Indian IT and ITES companies, such as TCS, Infosys, and HCL are contracting with global aerospace and defense OEMs, such as Boeing, Airbus, and Pratt & Whitney
 - Major defense companies, such as Boeing, Lockheed Martin, Sikorsky, Raytheon, and Textron Systems have their long term investment strategies in India
 - International and Indian players are benefitting by partnering together for attaining low cost manufacturing for both offset and other opportunities
- **Majority of offset opportunity in India is likely to be in MRO sector, Technology, IT & ESO, Part manufacturing, Control systems, Navigation system, and Simulation and training.**

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Overview – Offset Policy

Offset policy of country defines the mechanism for rerouting procurement funds paid to international contractors back into spending country

Direct Offset:

Player agrees to coproduce specific components of its products or to obtain related services in buying nation's territory

Indirect Offset:

Player agrees to assist importing country in development of its export or in investment requirements unrelated to principal contract

Semi-direct Offset:

offsets relative to equipment and/or services that are very similar to items covered by main purchase contract



Offset Types

Probable Defense product offset

- Small arms, mortars, cannons, guns, howitzers, anti tank weapons etc.
- Bombs, torpedoes, rockets, missiles etc.
- Aircraft and parts, unmanned airborne vehicles, aero engines and parts, aircraft equipment etc.
- Electronics and communication equipment
- Specialized equipment for military training or for simulation software
- Forgings, castings and other unfinished products, misc. equipment, etc. for military

Global Examples: Offset Policy in World

Country	Offset Sector	Minimum Contract Value for Offset Policy (US \$ Million)	Offset Amount as % of Contract Size	Direct V/s Indirect
India	Civilian and Military	\$70	30%	Both
Australia	Civilian and Military	\$3 M foreign content/any tender of \$5 M	Maximized where cost effective	Both
Belgium	Civilian and Military	Not Specified	100%	Both
Canada	Civilian and Military	\$2 preferred \$100 required	Not specified	Both
Denmark	Civilian and Military	\$3,800	100%	Both
Finland	Civilian and Military	\$13	100% + marketing consulting	Both
Greece	Military	\$1	80-120%	Direct
Israel	Civilian and Military	\$0.1	35%	No distinction
Korea, South	Military	\$10	30%	No distinction
Kuwait	Civilian and Military	\$4	30%	No distinction

Aerospace and Defense Offset Policy in India

2005: Defense Procurement Policy (DPP-2005), to benefit Indian Defense Industry

Policy introduced 30% offset in contracts valued above Rs 3 billion under “buy” and ‘buy and make’ categories to develop Indian defense Industry

2nd amendment 2008:

- List of products exempted from policy (Annexure-VI of the DPP)
- Removal of license to private industry to participate in offset programmed unless stated by DIPP
- Offset credit banking
- Banking of surplus offset credit
- Exemption of acquisitions under fast track from offset obligations

Offset Policy in India (DPP)



2005 2006 2007 2008 2009 2010 2011 2012 2013 2014

1st amendment 2006:

- Offset made mandatory as prescribed in DPP 2005
- Flexibility of forming joint ventures (JVs) with Indian firms
- Establishment of Defense Offset Facilitation Agency (DOFA)

3rd amendment 2012:

- Banked offset credit to remain valid for a period of seven years
- Overall penalty capped at 20%
- Defense offset Management Wing (DOMW) to be formed
- Credit for ToT (Transfer of technology) and equipment allowed
- The LTIPP for 2012-2027 was approved by the Defense Acquisition Council

4th amendment 2013:

- Enhanced flexibility to OEMs in choosing Indian Offset Partners
- Calibrated approach to submitting offset work plans

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Major Deals Announced under Aerospace and Defense Subjected to Offset Policy in India











































Potential US\$13 Billion Offset Opportunity from 2006

Sector	Items	Deal Amount (\$ M)	Offset amount @30% (\$ M)
Defense	10 C-17A Globemaster-3	4,100	1,090
	49 Mirage-2000-5	2,321	593
	12 C-130J-30 Hercules (2 deals)	1,964	619
	8 P-8I (Boeing)	2,137	641
	27 UAV (Harop/Heron) (3 deals)	566	202
	68 Mi-8MT/Mi-17/Hip-H Helicopter	1,300	405
	62 MiG-29SMT/Fulcrum-F	900	308
	75 PC-7 Turbo Trainer	497	150
Civil	68 Boeing for Air India	9,900 (1,1000 \$M list price)	2,970
	43 Airbus for Air India (Indian)	2,121 (2,200 \$M list price)	636
	~300 aircraft for other airlines	18,000	5,400
Total		43,806	13,014

Source: IDSA

Note: Not mandatory for non-government deals, but negotiations on country basis possible Source: CLSA Asia-Pacific Markets
Deals are based on CLSA 2006 Data

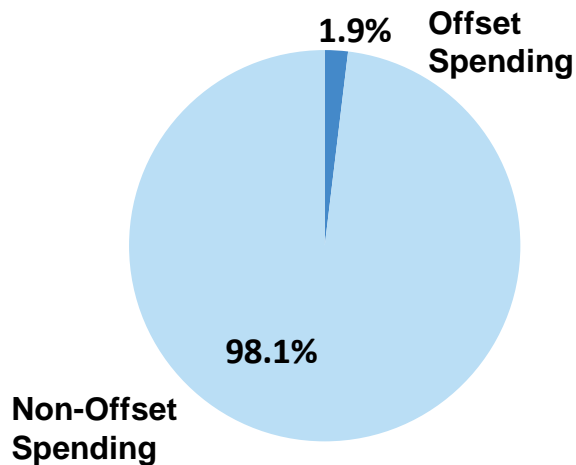
Relative Market Attractiveness for Offset Opportunity in Various Countries

Parameter	India	Australia	Canada	Denmark	Finland	Greece
Manufacturing facility - Composite						
Manufacturing facility -Metal						
Technology and IT services						
Avionics						
Assembly facility						
Maintenance facility						
Others						

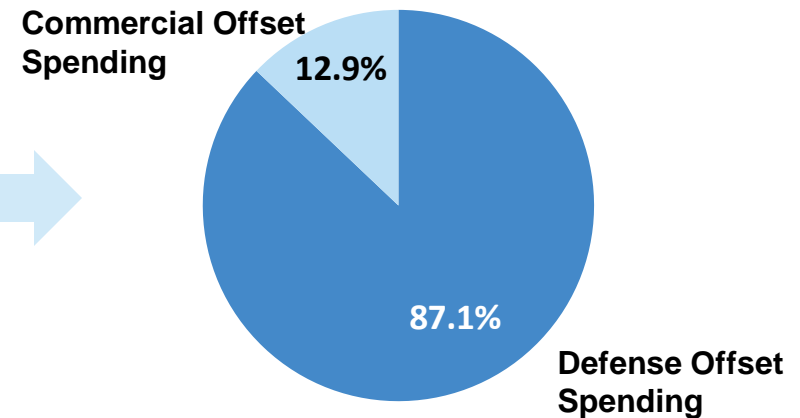
 High
  Medium
  Low- Medium
  Low
  No

Offset Opportunity in India Driven by Increasing Defense Spending and Deals in Fighter and Helicopter Segments

Indian Commercial Aerospace and Defense Spending in 2014 (US \$53 Billion)



Indian Commercial Aerospace and Defense Offset Spending in 2014 (US \$1.0 Billion)



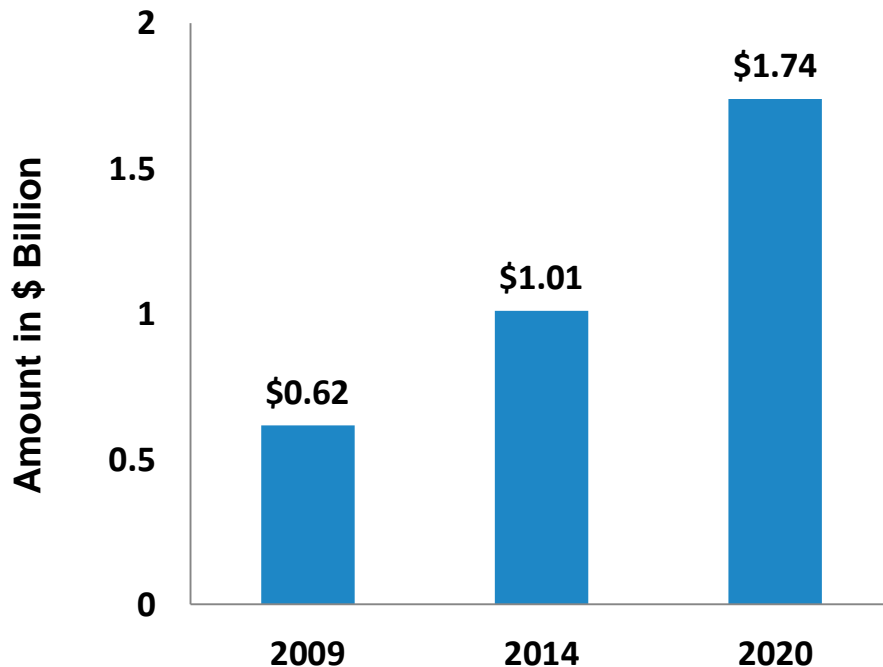
Key Insights

Source: Lucintel

- Increasing Indian defense spending creates more opportunity to foreign investors –
 - It is expected that defense spending will grow with ~6% CAGR from 2014-2020 and reach to US \$71 billion in 2020
 - In year 2014, defense offset accounted for \$ 0.88 billion
 - Combat, transport and trainer aircraft procurement are expected in next 5 to 10 years

Aerospace and Defense Offset Market in India – Trend and Forecast

Trend and Forecast of Indian Offset Market in Aerospace and Defense Industry



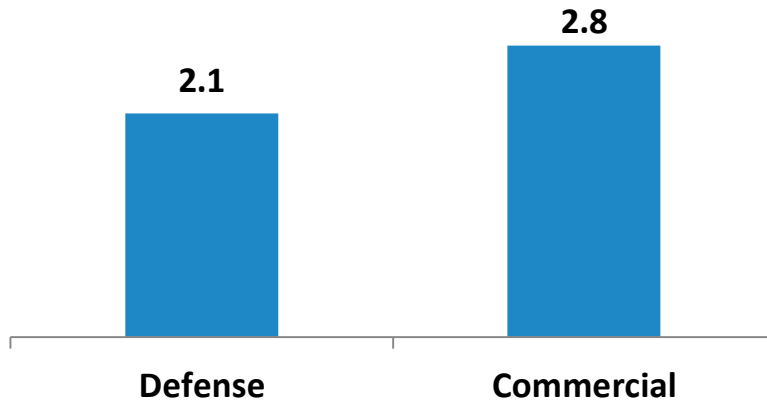
Source: Lucintel

Key Insights

- Total offset market for aerospace and defense is expected to be US \$1.74 billion in 2020
- Top deals in offset policy (multi-year)
 - 10 C-17A Globemaster-3 deal, total value of US \$ 4.1 billion
 - Contract between Boeing and Air India for 68 Boeing planes, value of US \$9.9 billion–
 - B737-800: 18 planes
 - B787-800: 27 planes
 - B777(-300, -200): 23 planes
 - Contract between Airbus and Air India for 43 Airbus planes, value of US \$2.1 billion
 - A319: 20 planes
 - A320: 4 planes
 - A321: 19 planes

Driving Factors for Aerospace Manufacturing in India: Indian Offset Market

Indian Aerospace and Defense Offset Value (\$ B)
 (Deal Finalized till 2014; 13 Deals)



Major Future Defense Procurement

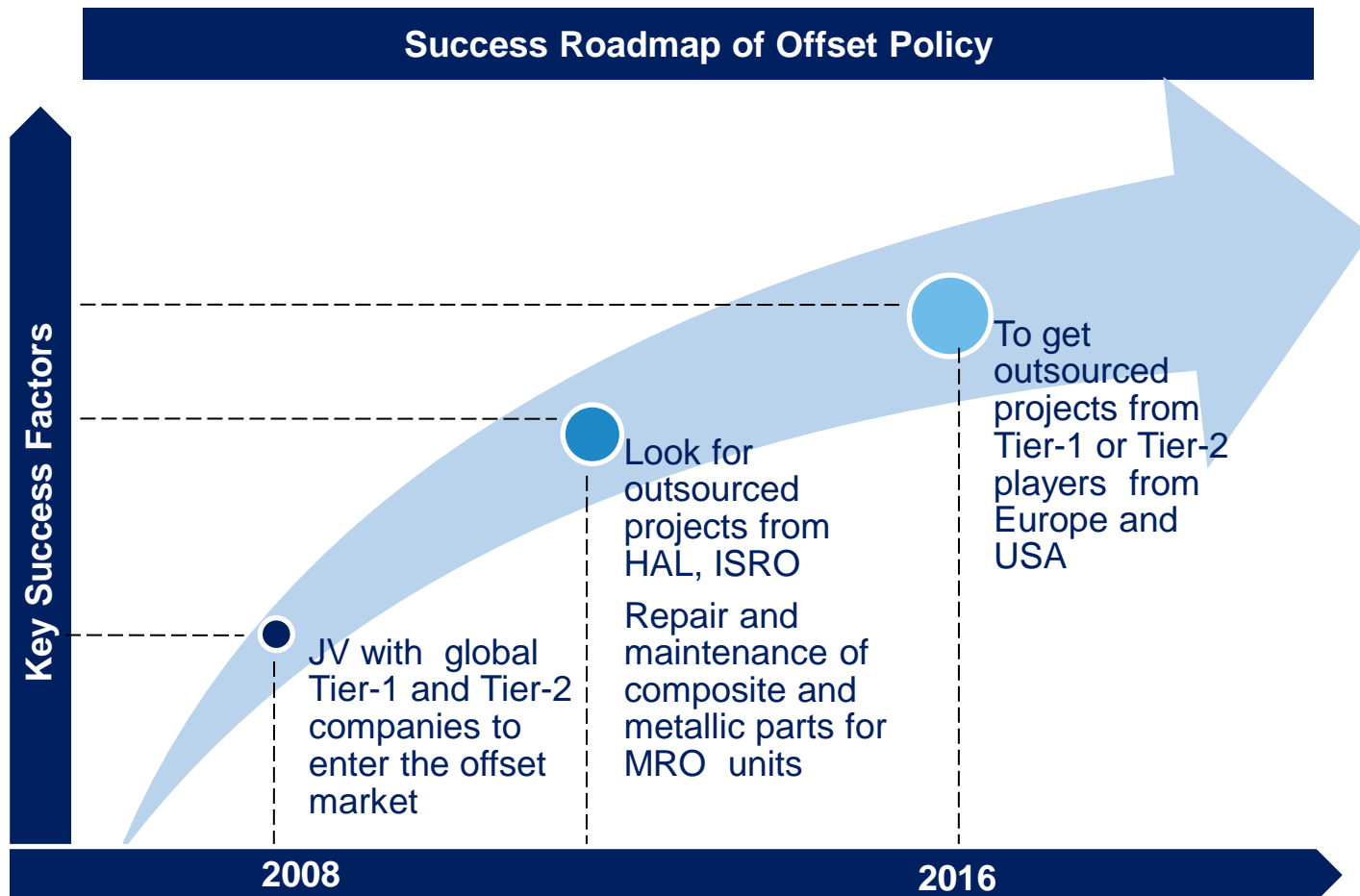
Procurement (Deals)	Year
6 Multi role tanker transport (MRTT)	2015
20 Hawk advanced jet trainer (AJT)	2016
214 Fifth generation fighter aircraft (FGFA)	2019
250 Advanced medium combat aircraft (AMCA)	2020
56 Medium lift transport aircraft	2020
45 Multi role transport aircraft (MTA)	2022

Source: PwC

Key Insights

- From 2006 to 2014, 13 offset contracts have been realized
- Total offset market for aerospace and defense is expected to be US \$1.74 billion in 2020
- Defense deals are expected in next 5 to 10 years are
 - Combat aircraft, Transport aircraft and Trainer aircraft

Success Roadmap- Offset Policy Implementation in India



Indian Companies Most Likely to Benefit from Aerospace and Defense Offset Policy

Companies	Sector
Hindustan Aeronautics (HAL)	Will provide airframe subassemblies and product support for Bell Helicopter
Bharat Electronics Limited	State Owned - Electronics, Engineering
NELCO	Electronic products, Automation Systems
Infotech Enterprises	IT solutions in Geo-space, Engg. Design (Close association with Pratt & Whitney)
HCLT, TCS, Wipro	IT, ITES
Bharat Forge	Auto Component, Forging
Astra Microwave	RF and Microwave components
Dynamatic Technologies	Hydraulics and Aerospace component mfg.
Mahindra and Mahindra	Autos
Larsen and Toubro (L&T)	Engineering Goods
Titan Industries	Precision equipment manufacturing for aerospace industry

*Source: CLSA 2006

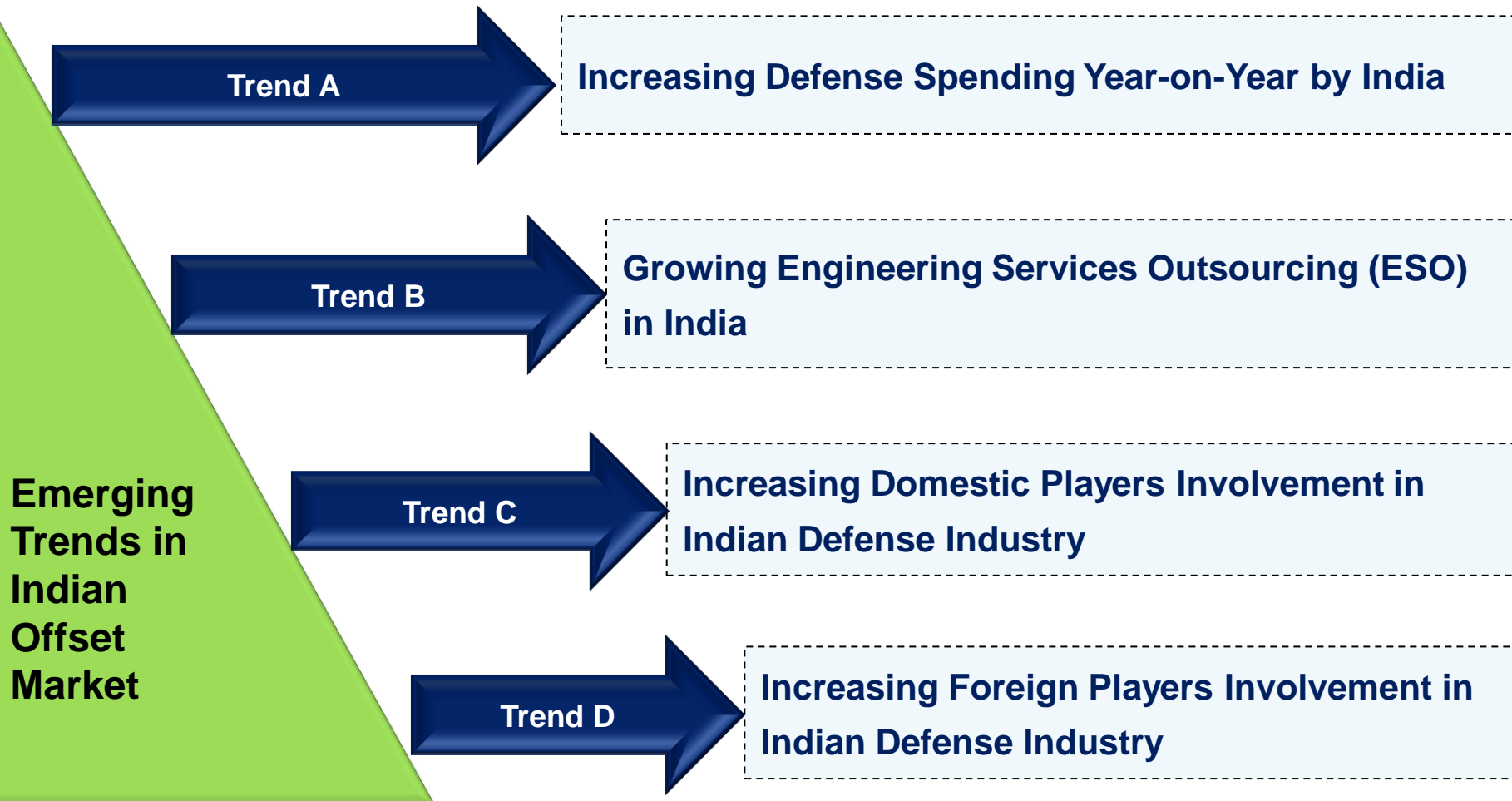
Offset Outsourcing Area in Indian Aerospace and Defense Industry

Outsourcing Maturity in Aerospace	
Future Outsourcing Areas	Engine Control Systems
	Air Control Management Systems
	Navigation System
Emerging Outsourcing Opportunities	Embedded Development
	Control System Design
	Simulation
	High-level Aeronautical System Design
	Testing Services
	Cockpit Equipment Support Software
	Composite Structuring
Currently Being Undertaken by Indian IT Vendors	Detailed Design For Modeling
	Manufacturing
	Drafting and Field Failure Analysis
Non-core Commonly Outsourced	Testing, Validation and Verification
	Technical documentation of designing work

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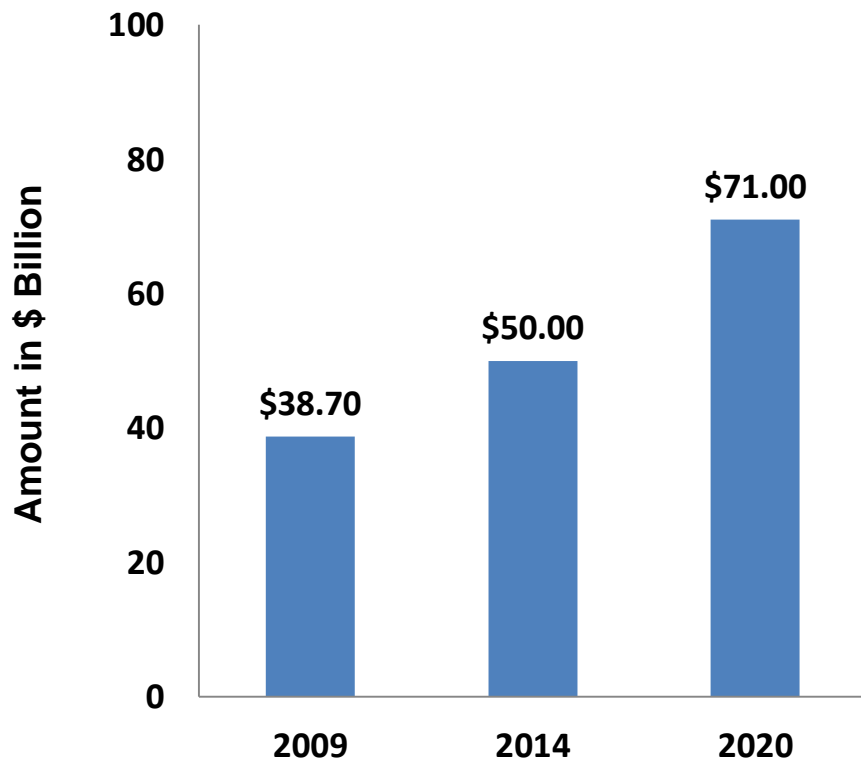
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Lucintel Believes that there are Four Key Trends Shaping the Offset Opportunity in India



Increasing Defense Spending; Defense Expenditure was \$50 billion in 2014, Expected to \$71 billion by 2020

Indian Defense Expenditure Trend and Forecast (\$ Billion)



Source: SIPRI

Key Insights

- Indian government currently ranked among top 10 countries on the basis of defense expenditure
- Indian defense expenditure is likely to reach \$71 billion in 2020 with CAGR of 6%
- Growing defense spending increases the opportunity for FDIs in Indian defense sector
 - Increasing capital investment on new weapons/ platforms
 - Increasing demand for updating equipments create largest equipment procurement cycles
- 94% of all planned offsets are in aerospace sector and the rest are in manufacturing of naval systems

Growing Engineering Services Outsourcing (ESO) in India

Growing Engineering services outsourcing (ESO) in India drives Indian ITES sector –

- Indian Engineering services outsourcing (ESO) was \$2 billion in 2014 –
 - ESO opportunity is expected to reach \$38-\$50 billion by 2020 in India
 - India accounted for 25% to 30% of the global offshored engineering services market
- Objective of ESO are product design, development and testing with CAD/CAM design, fluid dynamics, 2D & 3D modeling, remote monitoring, system architecture development, and associated technologies
- Approx 10 companies, such as Boeing, Airbus, Raytheon, Pratt and Whitney, Northrop Grumman, and Magellan Aerospace are setting their captive centers in India
 - It is expected that ESO in India will help foreign players to reduce design costs ~30% to 40% and shortening design cycles
 - Following are few major deals in Indian ITES sectors under ESO

Company	Boeing	Airbus	Pratt & Whitney
HCL Technologies	✓	✓	✓
Infosys	✓	✓	
Tata Consultancy Services (TCS)	✓		
Larsen and Toubro (L&T)	✓	✓	✓

*Source: NASSCOM and CLSA 2006

✓ Represents contracts among companies

Increasing Domestic Players Involvement in Indian Defense Industry

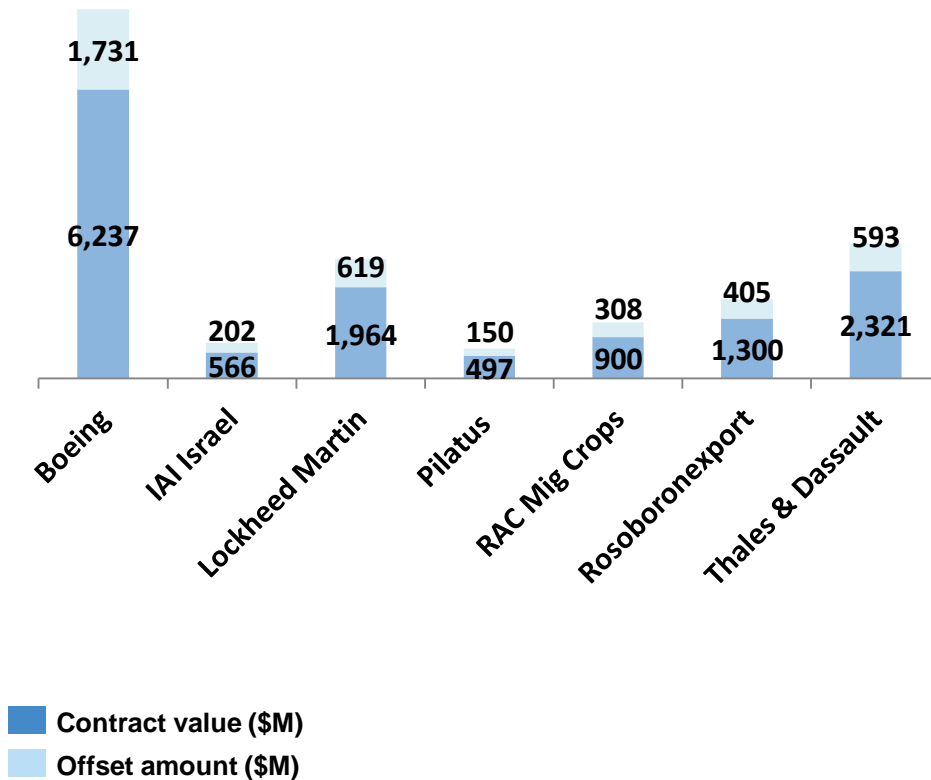
Increasing domestic players involvement in Indian defense industry –

- Introduction of “Buy and Make (Indian)” category in DPP 2009
- 40 Ordnance Factories (OFBs) and eight Defense Public Sector Undertakings (DPSUs) are working in India as defense weapons and systems manufacturer in India
- These DPSUs and OFBs outsourced tie-ups with Indian players and foreign players to improve Indian defense industry infrastructure
- Following are few agreements made by various foreign players and Indian players –

Indian Players	Foreign Player	Objective
Alpha Design Tech.	Israel Aerospace Industries	UAVs
Axis Aerospace & Tech.	Thales	Aerospace equipment, flight simulators
Dynamatic Technologies	AeroVironment	UAVs
	Boeing	P-8I aircraft components
	Textron Systems	Bell helicopter sub-systems
HAL	Snecma	Aerospace equipment
	BAE Systems	
	Rolls Royce	
Larsen & Tubro	Boeing	Defense and aerospace components
	EADS (including Cassidian)	Aerospace and electronic equipment
	Pratt & Whitney	Aircraft components
Millennium Aero Dynamics	International Institute of Advanced Aerospace Tech	UAVs, fixed-wing & amphibian aircraft
Tata Group	Boeing	Aircraft components
	Honeywell Aerospace	Aerospace equipment
	Lockheed Martin	Components for C-130 aircraft
	Sikorsky (Tara Aerospace Systems Limited)	Components, S-92 helicopter cabins

Growing Foreign Players involvement in Indian Defense Industry

Defense Procurement Contracts from 2006-2014 (\$ million)

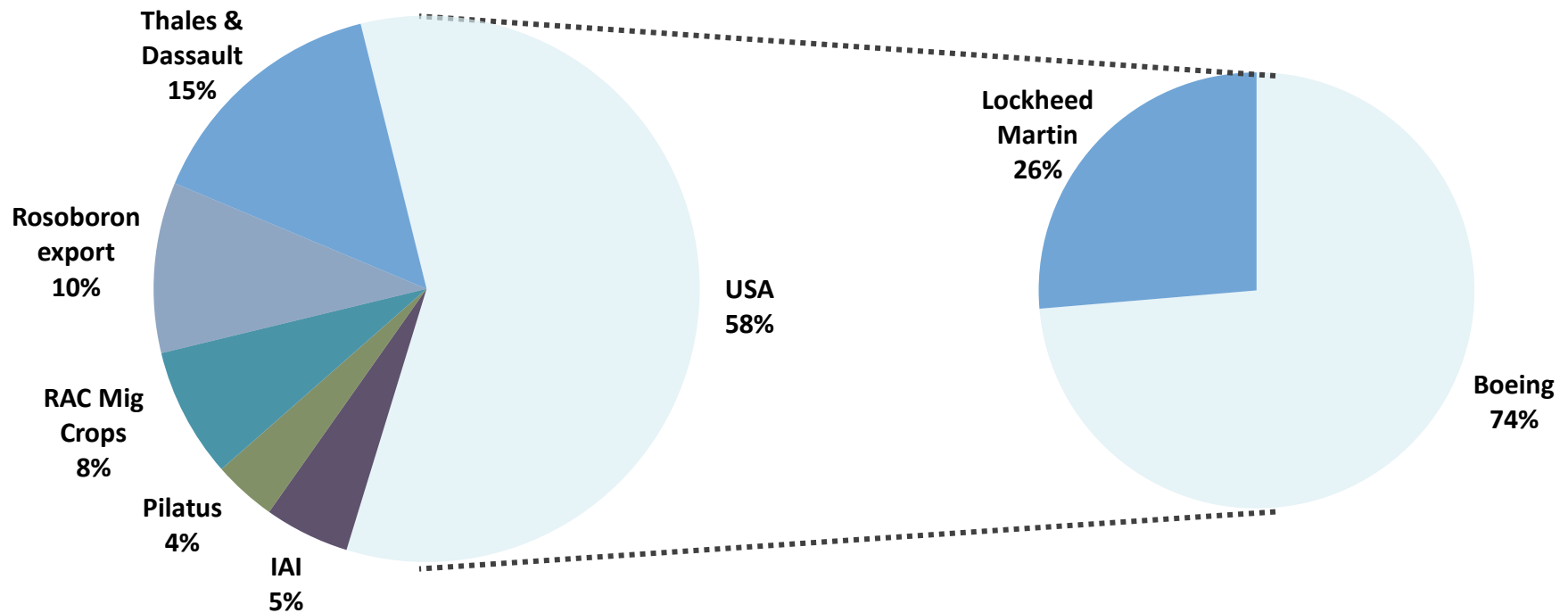


Procurement program	Company	Contract value (\$M)
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8 P-8I (Boeing)	Boeing	2,137
49 Mirage-2000-5	Thales & Dassault	2,321
12 C-130J-30 Hercules (2 deals)	Lockheed Martin	1,964
27 Harop/Heron UAV (3 deals)	Israel Aerospace Industries	566
68 Mi-8MT/Mi-17/Hip-H Helicopter	Russia	1,300
62 MiG-29SMT/Fulcrum-F	RAC Mig Crops	900
75 PC-7 Turbo Trainer	Pilatus	497

**Source: Lucintel*

Growing Foreign Players Involvement in Indian Defense Industry

Distribution of Defense Offset Contracts Awarded by India (2006 –2014)
(Total offset value: \$4.0 billion)



US companies accounted for ~58% of total offset contracts awarded by Indian government

– In US, Boeing accounted for ~74% of total deal followed by Lockheed Martin with 26% for the period

**Source: Lucintel*

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Conclusions

- **Total offset market for aerospace and defense is expected to be US \$1.74 billion in 2020**
 - Increasing Indian defense spending (from \$50 billion in 2014 to \$71 billion in 2020)
 - Making Indian defense market lucrative for foreign players and bringing FDI
 - Increasing procurement plans for new weapons/ programs and increasing demand for updating equipment
- **Majority of offset opportunity in India is likely to be in MRO sector, Technology and IT sector, ESO, Part manufacturing, Control systems, Navigation system, and Simulation and training.**
- **Currently, there is a technology gap in Indian aerospace industry as compared to developed nations and the Indian aerospace industry lacks strong supply chain**
 - Technology partnership by domestic players with multi-nationals is likely to minimize this gap
- **In next 10 years, there will be significant joint venture opportunity in Indian aerospace industry. Companies entering early in this opportunity will benefit from future growth potential.**
- **There will be increase in multi-national companies in Indian aerospace and defense industry in the next 10 years**
 - Major defense companies, such as Boeing, Lockheed Martin, Sikorsky, Raytheon, and Textron Systems have their long term investment strategies for India

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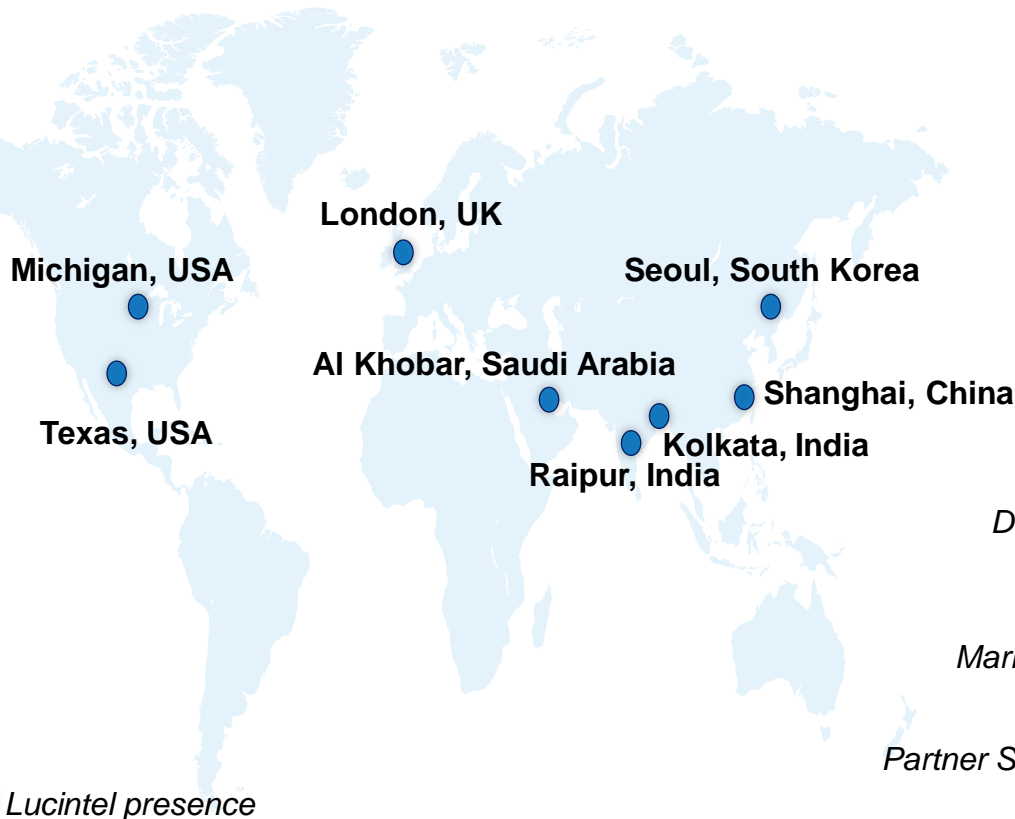
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Why Partner with Lucintel

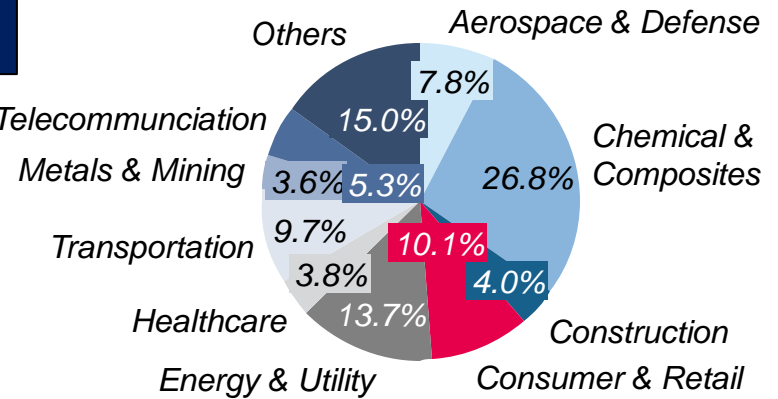
15+ Years of Successful Operations

8 Major Locations Covering Global Market Space

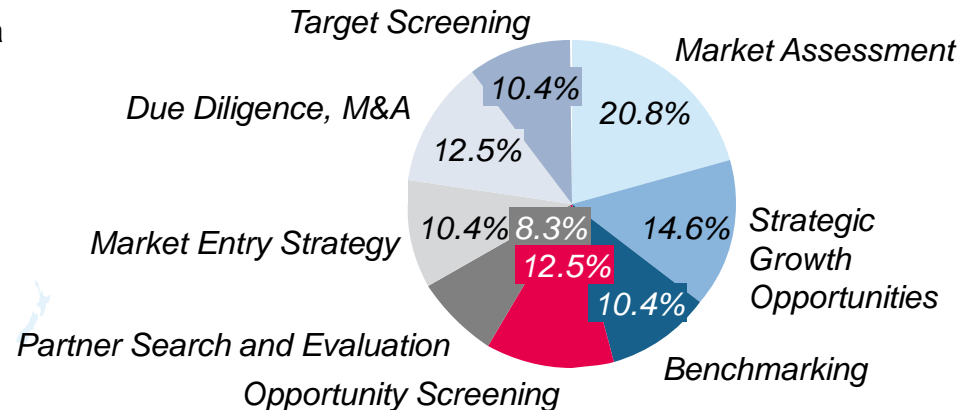
120+ Analysts/Consultants Worldwide



Lucintel Report Experience: 500+ Published Market Reports



Lucintel Consulting Experience: 500+ Consulting Projects



Lucintel's Experiences in Consulting Services

- Lucintel has worked with a variety of global companies, including (but not limited to) 3M, Audi, Carlyle, Credit Swiss, Cytec, DSM, Eastman, GE, Gurit, Sverica International, Sumitomo, etc. and has conducted hundreds of projects dealing with due diligence, M & A, market entry strategy, opportunity screening, and strategic growth consulting.
- Lucintel has deep knowledge in developing growth strategies and accessing vital, hard to find insights due to its strong technical and market knowledge as well as its primary and secondary research expertise. We have more than 30,000 contacts from more than 70 countries.
- Lucintel has performed a significant number of projects in market entry strategies, market assessment, M & A, due diligence, investment thesis and winning strategy formulation. Below are comments from our satisfied clients in the area of M & A, market assessment, and due diligence, demonstrating our capabilities in management consulting and timely delivery.
 - “I was very happy with Lucintel’s work. It helped us in making a confident investment decision. They delivered the project in a timely manner. – Dave Finley, Managing Director, Sverica International.
 - “Lucintel has its finger on the pulse of the market and drives deep strategic insights.”
Andy Schmidt, Managing Partner, MacQuarie Partners

1000+ Clients in 70 Countries Value Our Service



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